

Amendments to the Claims:

This listing of claims replaces all prior listings, and versions, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for estimating a channel, the method comprising the steps of:
 - calculating a least square channel estimate based on a training sequence;
 - calculating an interpolation coefficient matrix, wherein said interpolation coefficient matrix is calculated independent of knowledge of a channel multipath power profile of the channel; and
 - estimating the channel based on said interpolation coefficient matrix and said least square channel estimate.
2. (Currently Amended) The method of claim 1, wherein the step of calculating an interpolation coefficient matrix comprises the step of calculating the maximum number of resolvable multiple paths on the channel.
3. (Currently Amended) The method of claim 2, wherein the step of calculating an interpolation coefficient matrix further comprises the step of constructing a receiver multipath power profile of the channel.
4. (Currently Amended) The method of claim 3, wherein the step of calculating an interpolation coefficient matrix further comprises the step of performing a fast fourier transform on said multipath power profile.
5. (Currently Amended) The method in claim 4, wherein the step of calculating an interpolation coefficient matrix further comprises the step of ~~determining an interpolation matrix by~~ constructing a teoplitz of the result of the step of performing a fast fourier transform.

6. (Currently Amended) The method in claim 5, wherein the step of calculating an interpolation coefficient matrix further comprises multiplying said interpolation matrix by said least square channel estimate.

7. (Currently Amended) An apparatus for estimating a channel, the apparatus comprising:

an LS estimator for calculating a least square channel estimate based on a training sequence;

a coefficient interpolator coupled to said LS estimator, said coefficient interpolator for calculating an interpolation coefficient matrix for the channel, wherein said interpolation coefficient matrix is calculated independent of knowledge of a channel multipath power profile of the channel; and

a channel estimator coupled to said coefficient interpolator and to said LS estimator, said channel estimator for estimating the channel based on said interpolation coefficient matrix, formed ~~independent~~ independent of the channel multipath power profile, and said least square channel estimate calculated by said LS estimator, the channel estimated.

8. (Currently Amended) The apparatus of claim 7 wherein said coefficient interpolator further calculates the maximum number of resolvable paths on the channel for use in calculating, said interpolation coefficient matrix.

9. (Currently Amended) The apparatus of claim 8, wherein said coefficient interpolator constructs a receiver multipath power profile of the channel for use in calculating said interpolation coefficient matrix.

10. (Currently Amended) The apparatus of claim 9, wherein said coefficient interpolator further performs a fast fourier transform on said multipath power profile to generate a result for use in calculating said interpolation coefficient matrix.

11. (Currently Amended) The apparatus of claim 10, wherein said coefficient interpolator further constructs a teoplitz matrix of the result of said fast fourier transform to generate ~~an~~ the interpolation coefficient matrix.

12. (Currently Amended) The apparatus of claim 11, wherein said coefficient interpolator further multiplies said interpolation coefficient matrix by said least square estimate calculated in said LS estimator to estimate the channel.

13. (Currently Amended) A method for estimating at least one channel at an OFDM receiver that receives a signal formed of symbols, each of a selected symbol duration, upon the at least one channel formed of multipaths, said method comprising the steps of:

~~determining a receiver multipath profile for the at least one channel; and~~
estimating a maximum delay encountered upon the channel;
calculating a maximum number of the multipaths of the channel
responsive to the maximum delay estimated during said step of estimating;
creating a multipath power profile responsive to calculations made during
said step of calculating the maximum number;
transforming the multipath power profile into a frequency domain; and
calculating an interpolator coefficient responsive to the multipath power
profile represented in the frequency domain based on said receiver multipath profile;
~~the interpolator coefficient independent of a channel multipath power profile of the~~
~~channel.~~

14. (Original) The method of claim 13, further comprising the steps of:

calculating a least square channel estimate for each channel of the at least one channel; and

multiplying each least squares channel estimate for each channel of the at least one channel by said interpolation coefficient to estimate each at least one channel.

15. (Cancelled)

16. (Cancelled)

17. (Currently Amended) An OFDM apparatus at an OFDM receiver that receives a signal formed of symbols, each of a selected symbol duration, upon a channel of multipaths, said OFDM apparatus comprising:

means for estimating a maximum delay encountered upon the channel;

means for calculating a maximum number of the multipaths of the channel responsive to the maximum delay estimated by said means for estimating;

means for creating a multipath power profile responsive to calculations made by said means for calculating;

means for transforming the multipath power profile created by said means for creating into a frequency domain; and

means for calculating an interpolator coefficient responsive to the multipath power profile represented in the frequency domain ~~based on said receiver multipath power profile, said interpolator coefficient independent of a channel multipath power profile of the channel separate from said receiver multipath power profile.~~

18. (Original) The apparatus in claim 16, further comprising:

a buffer for storing a training sequence;

means for calculating a least square channel estimate from said stored training sequence; and

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means for combining said least square channel estimate with said interpolator coefficient.